

SCIENCE & EDUCATION Impact

Benefits from USDA/Land-Grant Partnership

Homegrown Security

Safe, secure food supply

The Irish Potato Famine and the 1918 flu pandemic are distant memories compared to the more recent events of 9/11, but both were more devastating and could happen again. A safe and secure food supply is a big part of homeland security. The USDA and Land-Grant University System partnership is assembling a rapid early warning network that keeps America's food supply safe and economical.

Payoff

- **Linking the nation.** The national **Extension Disaster Education Network** www.eden.lsu.edu, a collaboration of Cooperative Extension systems across the nation, provides resources and training to state and local extension staff to better prepare them to respond. EDEN includes 49 land-grant universities in 46 states, Guam and Puerto Rico.
- **Catastrophes avoided.** On Nov. 6, 2004, soybean rust was found for the first time in North America near Baton Rouge by a **Louisiana State** plant pathologist. In four days, DNA analysis confirmed the disease, and a team of USDA Animal and Plant Health Inspection Service pathologists, Louisiana State, state regulatory officials and Department of Homeland Security agents took action. **Arkansas** scientists followed suit. Discovering rust late in the 2004 growing season instead of early in the 2005 season averted a catastrophic loss to the nation's \$1.3 billion to \$2 billion soybean crop by giving producers several months to prepare for the onset of the disease. The **Delaware** Poultry Diagnostic Center identified two avian influenza infected flocks in northern Sussex County and went into immediate "lockdown mode." Scientists worked around the clock for a week to test the 50 commercial flocks within five miles of the initially infected flock. Containing the virus was a coordinated effort by poultry scientists at Delaware and **Maryland**, the Delaware Department of Agriculture, the Delmarva Broiler Industry and USDA Veterinary Services. Since avian flu can spread through the air, on people's clothing and on farm delivery trucks, the only way to stop its spread is to contain and destroy the chickens. An innovative in-house composting procedure developed by Delaware and Maryland Extension played a major role in containing this virus in

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one of the world's most populated production areas, saving the \$1.5 billion industry and protecting human health.

- **It's not just meat.** Fresh produce is particularly vulnerable to bioterrorism because it usually is eaten raw. There's no preservation step to destroy any intentional contamination by chemical toxins or human microbial pathogens. **Georgia, Florida and Clemson** (South Carolina) food scientists examined the bioterrorism risks to these industries and designed a tracking system for fresh produce. Now, fresh-produce growers and packers develop written documentation that will help track any breaches in security.
- **Keeping track.** The National Animal Identification System helps track livestock to prevent the spread of diseases such as bovine spongiform encephalopathy or "mad cow," but it is time consuming. **Kansas State** researchers developed a new tracking device with a high radio frequency and low electromagnetic interference that sets up quickly. It will help livestock truck drivers track animal and owner identification numbers, time, date and GPS location, and will link the information in a fraction of the time of the old system.
- **Early detection.** With continuing drought since 1999, many Montana cattle producers have faced the unpleasant question, "Is my hay poisoned?" Cattle abortion and death are at stake if the animals eat cereal forages with dangerously high nitrate levels caused by drought. **Montana State** Extension provided testing that kept \$12 million in toxic hay out of the feed supply, preventing an estimated \$37 million in losses by producers. **Purdue** scientists are genetically modifying magnetic bacteria to produce structures on microchips that can quickly identify such substances as PCBs, pesticides and chemical weapons. These sensors could detect pollutants and chemical weapons quickly, accurately and cost effectively. Researchers at that **Indiana** institution also invented a highly sensitive fiber-optic sensor that can detect a low concentration of *Listeria*, a bacterium responsible for food poisoning, in less than 24 hours.

- **Homeland security projects.** Land-grant universities across the country are working with the Department of Homeland Security to keep our food supply safe. **Connecticut** Extension cooperates with the state Department of Agriculture, the Department of Public Health and the USDA, Animal and Plant Health Inspection Service and uses USDA homeland security funds to increase its animal disease surveillance, testing and management program. Cuming County is Nebraska's leading beef-feedlot county and among the top beef producers nationwide. **Nebraska** Extension worked with county officials and livestock producers to prepare for a possible biosecurity threat from agro-terrorism or an outbreak of a contagious disease. Their preparedness plan should reduce economic losses to the county's \$525 million per year livestock industry in the event of a problem. **Tennessee** used homeland security funds to develop the Cooperative Pest Survey program that helps detect pests that could devastate state crops. With funding provided by the Department of Homeland Security, **Washington State** set up a network of early detector sites near state and international borders and ports. Each site is equipped with microscopes, digital cameras and new technology, enabling users share to diagnostic information via the Web. The **North Dakota State** Great Plains Institute of Food Safety conducts research and outreach to combat threats to public health and has added academic courses and degrees, from certificates through a doctorate in food safety. The Institute has been recognized nationally and is now part of the U.S. Department of Homeland Security's National Center for Food Protection and Defense.



**Cooperative State Research, Education,
and Extension Service**
United States Department of Agriculture

Cooperative State Research, Education, and Extension Service in cooperation with the Extension Committee on Organization and Policy, the Experiment Station Committee on Organization and Policy, the Academic Programs Committee on Organization and Policy, the International Programs Committee on Organization and Policy, and the Louisiana State University Agricultural Center.

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